

REMARKS

Reconsideration and allowance of the present patent application based on the following remarks are respectfully requested. Claims 1-16 are pending.

The specification is objected to because of alleged informalities regarding Figures 2a-g. Applicants respectfully submit that the amendment to the specification obviates the objection. The specification has been amended to read "Figures 2a-g illustrate..." at page 11, [0048]. Applicants note that the description beginning at paragraph 0048 and continuing through about paragraph 0050 describes not only Figure 2a, as suggested in paragraph 1a of the Office Action, but further describes Figures 2b-2g. Note, for example, that pupil shapes 28a-c and 29a-c are described in paragraph 0050. Paragraph 0051 has also been amended to correctly refer to Figure 2a. Applicants respectfully request that the objection be withdrawn.

The specification is further objected to because of an alleged failure to describe the subject matter of claim 4. Claim 4 recites that the optical element is in a pupil plane of the illumination system. The Examiner is directed to paragraph 0052 which, in reference to an embodiment of the invention, explicitly states that the rotation is carried out in a pupil plane 21 downstream of the reflective integrator IN. Applicants respectfully request that the objection be withdrawn.

The drawings are objected to in view of the lack of a reference in the specification to the reference numeral 2 and because they allegedly fail to show reference 22 as described in the specification. Applicants submit that this is merely a typographical error in the Figure, and that it is clear from the specification, paragraph 0049, that the two reference numerals should be 22 and 23 respectively. The 22 has become separated due to a software error, causing the confusion. A replacement Figure 2a with the correct reference numbers has been submitted herewith. Applicants respectfully request that the Examiner approve the replacement Figure and withdraw the objection.

The drawings are further objected to for reasons related to the objection to the specification and claim 4 addressed above. Applicants submit that the location of the element is perfectly clear from the specification, and paragraph 0052 in particular. The location of references 41-43 are likewise clear from paragraph 0052, Figure 2a and Figure 4. Likewise, the location of the turbine-like structure of Figure 5 is clear from the whole of the specification. Paragraph 0054 has been amended to provide a reference number (50) for the optical element shown in Figure 5.

Applicants respectfully submit that none of the amendments to the drawings or specification constitute new matter in accordance with Rule 1.121(f).

Claims 1, 4, 13 and 16 stand rejected under 35 U.S.C. §103(a), as being unpatentable over Kawahara in view of Yamazaki. Applicants respectfully traverse this rejection. Item 25, described in the Office Action as creating an asymmetric intensity distribution is a half-mirror that redirects light to a detector 12. (*See e.g.*, paragraph 0068). Paragraph 0070, also cited for the proposition that item 25 creates an asymmetric intensity distribution, does not mention item 25 at all. Furthermore, no asymmetric intensity distribution is created. As clearly described in paragraph 0071, the common openings 240 are driven so that four aperture widths simultaneously increase or decrease. Likewise, the shapes produced (*see* Figs. 6-11) are clearly symmetric about the X and Y axes. Additionally, though the Office Action alleges that item 38/30 is a reflective optical integrator, Applicants can find no such disclosure in paragraph 007 as cited. To the contrary, Figure 1 clearly shows item 38 to be a “fly’s eye” type integrator, not a reflective integrator. Finally, item 11 does not appear to be in a pupil plane of the illumination system of Kawahara. To the contrary, rays entering item 11 are shown as being parallel, not convergent as asserted in the Office Action.

Yamazaki fails to overcome any of the myriad deficiencies of Kawahara. The Office Action merely relies on Yamazaki’s alleged teaching of a reflective optical integrator having a rectangular cross-section perpendicular to the optical axis and sides parallel to mutually perpendicular X and Y axes. In view of the failings of the primary reference, Applicants submit that whatever the teachings of Yamazaki, they are irrelevant to the patentability of the claims. Moreover, the alleged reason for combination, “to provide a reference image,” does not appear to be relevant to the claimed invention, nor does the Office Action point to any evidence in either reference that supports that conclusion. Finally, the Office Action provides no evidence or argument as to why one of ordinary skill in the art would want “to provide a reference image” in the context of either reference or the present invention.

Because Kawahara and Yamazaki, taken singly or in combination, fail to teach or suggest the claimed subject matter of claims 1, 4, 13 and 16, Applicants respectfully request that the rejection under 35 U.S.C. §103(a) based on Kawahara in view of Yamazaki be withdrawn.

Claims 2, 3, 14 and 15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kawahara in view of Yamazaki and further in view of Suzuki.

Applicants respectfully submit that the comments above regarding Kawahara and Yamazaki apply equally to claims 2, 3, 14 and 15. Furthermore, Suzuki fails to overcome

any of the deficiencies of Kawahara and Yamazaki. Moreover, the cited paragraph 0052 has nothing to do with an optical element constructed and arranged to rotate an intensity distribution. In contrast, this paragraph merely describes a conventional off-axis illumination pattern using light located at an angle, not rotated. Applicants can find no discussion in Suzuki regarding rotation of an intensity distribution. Because Suzuki fails to overcome the deficiencies of Kawahara and Yamazaki, and additionally fails to teach or suggest the additional recitations of claims 2, 3, 14 and 15, Applicants respectfully request that the rejection under 35 U.S.C. §103(a) based on Kawahara in view of Yamazaki and further in view of Suzuki be withdrawn.

Claims 5, 6 and 8-10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kawahara in view of Yamazaki and further in view of Kakuchi.

Applicants respectfully submit that the comments above regarding Kawahara and Yamazaki apply equally to claims 5, 6 and 8-10. Furthermore, Kakuchi fails to overcome any of the deficiencies of Kawahara and Yamazaki. Items 21 and 22 cited in the Office Action appear to be a part of an interferometer 29 as described in paragraphs 0031-0034 of that reference. Applicants submit that the internal structure of an interferometer has not even marginal relevance to the invention described in claims 5, 6, and 8-10. The piecemeal nature of the rejection is evident in that the Office Action makes no attempt to equate these interferometer components with an optical element constructed and arranged to redistribute an intensity distribution exiting the reflective integrator such that the intensity distribution is asymmetric with respect to at least one of the X and Y axes. Finally, the alleged motivation to use the teachings of Kakuchi “for at least the purpose of providing a reference beam,” does not appear to have any relevance either to the claims or to the combination of Kawahara and Yamazaki and no evidence in any of the references is provided to support this conclusion.

Because Kakuchi fails to overcome the deficiencies of Kawahara and Yamazaki, and additionally fails to teach or suggest the additional recitations of claims 5, 6 and 8-10, Applicants respectfully request that the rejection under 35 U.S.C. §103(a) based on Kawahara in view of Yamazaki and further in view of Kakuchi be withdrawn.

Claims 7, 11 and 12 likewise stand rejected under 35 U.S.C. §103(a) based on Kawahara, Yamazaki and Kakuchi and further in view of Shinoda, Izumi and Mulken in view of Mulken respectively. Applicants have thoroughly addressed the alleged combination of Kawahara, Yamazaki and Kakuchi above. Claims 7, 11 and 12 are patentable for at least the same reasons as claim 1, from which they depend. None of Shinoda, Izumi and Mulken overcomes the deficiencies of Kawahara, Yamazaki and Kakuchi. The alleged reasons for

combination lack any citation to any evidence. Because there is no proper allegation of motivation to combine, the rejection fails to constitute a *prima facie* case of obviousness.

Because Shinoda, Izumi and Mulkens, either alone or in any proper combination, fail to teach or suggest the claimed invention, Applicants respectfully request that the rejection of claims 7, 11 and 12 under 35 U.S.C. §103(a) based on Kawahara, Yamazaki and Kakushi and further in view of Shinoda, Izumi and Mulkens be withdrawn.

In view of the foregoing, the claims are now in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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